LAND RESOURCES OF
BUSSELTON-MARGARET RIVER-AUGUSTA
WESTERN AUSTRALIA *

BUSSELTON MAP SHEET

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MAXIMUM MAP SCALE - 1:50 000

Projection: Universal Transverse Mercator
Grid: A.M.G., Zone 50
Date: 1988
Source Data: Based on field survey, 1:25,000 air-photo (1986) interpretation and collation of existing published and unpublished land resource data. Compiled by P.J. Tille and N.C. Lantzke, Division of Resource Management, Department of Agriculture, Western Australia.
Cadastral overlay supplied by CADSUB, Department of Land Administration Western Australia.
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DEPARTMENT OF AGRICULTURE - WESTERN AUSTRALIA

NATIONAL SOIL CONSERVATION PROGRAM

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LAND UNIT DESCRIPTIONS

Abba Plains Land System:
A - Abba Flats ; Flats and low rises with sandy grey brown duplex (Abba) and gradational (Busselton) soils.
Also included in areas mapped as A are minor areas of; A2 - Abba Gentle Slopes ; Gentle slopes (2-5% gradients) with gravelly sands and grey brown gradational and duplex soils.
Ad2 - Abba Deep Sandy Dunes ; Gently sloping low dunes and rises (0-5% gradients) with deep bleached sands.
Adw - Abba Deep Sandy Wet Flats ; Poorly drained depressions (mainly in swales). Deep sandy soils with surface organic matter build up.
Af - Abba Fertile Flats ; Well drained flats with sandy gradational grey brown (Busselton) soils, some red brown sands and loams (Marybrook Soils).
AF - Abba Very Fertile Flats ; Well drained flats with deep red brown sands, loams and light clays (i.e. Marybrook soils).
Afw - Abba Fertile Wet Flats ; Slight depressions, which are poorly drained in winter, with deep red brown sands, loams and light clays (i.e. Marybrook Soils).
Av - Abba Vales ; Small narrow depressions along drainage lines. Alluvial soils.
Avw - Abba Wet Vales ; Small narrow swampy depressions along drainage lines. Alluvial soils.
Aw - Abba Wet Flats ; Winter wet flats and slight depressions with sandy grey brown duplex (Abba) and gradational (Busselton) soils.
Awi - Abba Wet Ironstone Flats ; Winter wet flats and slight depressions with shallow red brown sands and loams over ironstone (i.e. bog iron ore soils).
Awy - Abba Very Wet Saline Flats ; Poorly drained depressions with some areas which become saline in summer. Shallow sands over clay subsoils (i.e. Abba Clays).

Blackwood Alluvial Plain Land System:
B - Blackwood Flats ; Flats with a variety of deep (mainly sandy) soils
Bd - Blackwood Deep Sandy Flats ; Flats and low dunes with deep bleached sands.
Bf - Blackwood Fertile Flats ; Flats, mainly with deep yellow loamy soils (i.e. Marybrook Yellow Sandy Loam).
Bvw - Blackwood Wet Vales ; Drainage depressions with broad swampy floors. Mixed alluvial and sandy soils.
Bw - Blackwood Wet Flats ; Flats and slight depressions which are winter wet. Mixed alluvial and sandy soils.
Bwy - Blackwood Estuarine Flats ; Estuarine flats fringing the Blackwood River near its mouth.

Cowaramup Uplands Land System:
C - Cowaramup Flats ; Flats (0-2% gradient) with gravelly duplex (Forest Grove) and pale grey mottled (Mungite) soils. Also included in areas mapped as C are areas of ; C2- Cowaramup Gentle Slopes ; Gentle slope (2-5% gradient) with gravelly duplex (Forest Grove) soils. The flats (C) are the dominant unit, the gentle slopes (C2) occur on the margins of this unit, usually adjacent to the Wilyabrup slopes.
Cd2 - Cowaramup Deep Sandy Rises ; Flats and gently sloping rises (gradients 0-5%), with deep bleached sands. Some areas of low and moderate slopes (gradients 5-15%).
Cdw - Cowaramup Deep Sandy Wet Flats ; Poorly drained flats and depressions with deep organic stained sands.
Ci - Cowaramup Ironstone Flats ; Flats and gentle slopes (0-5% gradient) with some laterite outcrop and shallow gravelly sands over laterite.
Cr2 - Cowaramup Rocky Gentle Slopes ; Flats and gentle slopes (0-5% gradient) with shallow rocky soils and some granitic outcrop.
CR - Cowaramup Rock Outcrop ; Areas dominated by granitic outcrop.
Cv - Cowaramup Vales ; Small, narrow V-shaped drainage depressions with gravelly duplex (Forest Grove) soils.
Cvw - Cowaramup Wet Vales ; Small, broad U-shaped drainage depressions with swampy floors. Gravelly duplex (Forest Grove) soils on sideslopes and poorly drained alluvial soils on valley floor. This unit can be subdivided into the (side) slopes and the (valley) floor.
Cw - Cowaramup Wet Flats ; Poorly drained flats and slight depressions with pale grey mottled (Mungite) soils.

D'Entrecasteaux Dunes Land Systems:
D - D'Entrecasteaux Flats ; Interdune flats with deep calcareous sands with organic stained topsoils.
D5 - D'Entrecasteaux Steep Dunes ; Steep dunes, sheltered from the prevailing winds, with deep calcareous sands.
Db - D'Entrecasteaux Beaches ; Beach and foredunes streching along the south coast, with deep calcareous sands.
Dd - D'Entrecasteaux Deep Sandy Flats ; Flats with deep bleached siliceous sands.
Dd2 - D'Entrecasteaux Deep Sandy Gentle Dunes ; Gently sloping (2-5% gradient) dunes, sheltered from the prevailing winds, with bleached and yellow brown siliceous sands, sometimes overlying limestone.
Dd5 - D'Entrecasteaux Deep Sandy Steep Dunes ; Steep dunes (gradient in excess of 15%) with bleached and yellow brown siliceous sands, sometimes overlying limestone.
DE5 - D'Entrecasteaux Exposed Steep Dunes ; Steep dunes with deep calcareous sands, exposed to prevailing winds which come off the ocean.
DEm5 - D'Entrecasteaux Blowouts ; Steep bare dunes of mobile pale calcareous sands.
Dr - D'Entrecasteaux Rocky Dunes ; Dunes with dark calcareous sands containing limestone rubble.
Drd - D'Entrecasteaux Deep Sandy Rocky Flats ; Flats with yellow brown sands overlying limestone.

Gracetown Ridge Land System:
G2 - Gracetown Gentle Slopes ; Gentle slopes (gradients 2-5%) with deep reddish and yellow brown siliceous sands over limestone (Spearwood Sands). Not exposed to prevailing winds.
G3 - Gracetown Low Slopes ; Low slopes (gradients 5-10%) with deep yellow brown siliceous sands over limestone (i.e. Spearwood Sands). Not exposed to prevailing winds.
Ge - Gracetown Exposed Flats ; Ridge crest, exposed to prevailing winds, with deep and shallow yellow brown siliceous sands over limestone (i.e. Spearwood sands).
GE - Gracetown Exposed Slopes ; Moderate slopes (gradients 10-15%) on the west coast exposed to prevailing wind directly off the ocean, with deep and shallow yellow brown siliceous sands over limestone (i.e. Spearwood Sands).
GEm - Gracetown Blowouts ; Small blowouts with deep yellow siliceous sands.
Gk - Gracetown Karst Areas ; Small areas with sinkholes, dolines, limestone scarps and cave entrances.
Gv - Gracetown Valleys ; Deepish narrow valleys incised into the Gracetown Ridge.

Glenarty Hills Land System:
H3 - Glenarty Low Slopes ; Slopes (gradients mainly 5-10%) with a variety of soil types.
Hd - Glenarty Deep Sandy Flats ; Flats with deep bleached sands
Hd3 - Glenarty Deep Sandy Slopes ; Slopes (gradients mainly 5-10%) with deep bleached sands and quartz grits.
Hdw - Glenarty Sandy Wet Flats ; Poorly drained flats and depressions with deep organic stained sands.
Hf - Glenarty Fertile Flats ; Well drained valley flats and floodplains with deep (often red brown loamy) alluvial soils.
Hi3 - Glenarty Ironstone Slopes ; Slopes (gradients mainly 5-10%) with shallow gravelly sands over laterite.
HR - Glenarty Rock Outcrop ; Areas dominated by granitic outcrop.
Hv - Glenarty Valleys ; Narrow V-shaped open depressions along drainage lines.
Hvw - Glenarty Wet Valleys ; Broad U-shaped drainage depressions with swampy floors.
Hw3 - Glenarty Wet Slopes ; Slopes (gradients mainly 5-10%) with high winter water tables and pale grey mottled (Mungite) soils.

Kilcarnup Dunes Land System:
Kb - Kilcarnup Beaches ; Beaches and foredunes of calcareous sand, along the west coast.
KE - Kilcarnup Exposed Dunes ; Steep dunes (gradients usually in excess of 20%) on the west coast, exposed to prevailing winds which come directly off the ocean, with deep pale calcareous sands. Poorly vegetated.
KEf - Kilcarnup Exposed Dunes (with organic matter build up) ; Steep dunes (gradients usually in excess of 20%) on the west coast, exposed to prevailing winds which come directly off the ocean. Deep pale calcareous sands with brown topsoil. Well vegetated.
KEm - Kilcarnup Exposed Blowouts ; Steep bare dunes of mobile pale calcareous sands, on the west coast exposed to prevailing winds directly off the ocean.
Kf - Kilcarnup Dunes (with organic matter build up) ; Steep dunes, (gradients usually in excess of 20%) not exposed to prevailing winds. Deep pale calcareous sands with brown topsoil.
Km - Kilcarnup Blowouts ; Steep bare dunes of mobile pale calcareous sand, not exposed to prevailing winds.
Kr - Kilcarnup Rocky Dunes ; Low to steep dunes (gradients 5-10%), not exposed to prevailing winds. Dark calcareous sands containing limestone rubble.
KrE - Kilcarnup Exposed Rocky Dunes ; Steep dunes (gradients usually in excess of 20%) with dark calcareous sands containing limestone rubble, on the west coast exposed to prevailing winds directly off the ocean.
KRE - Kilcarnup Exposed Rock Outcrop ; Dominantly highly eroded areas where bare limestone has been exposed.

Ludlow Plain Land System:
L - Ludlow Flats ; Flats and very low dunes. Deep yellow brown siliceous sands over limestone (i.e. Spearwood Sands).
Lv - Ludlow Vales ; Narrow floodplains in small depressions along creeks and rivers. Sandy alluvial soils.
Lvg - Ludlow Wet Clayey Vales ; Narrow floodplains in small depressions along creeks and rivers. Clayey alluvial soils.
Lvw - Ludlow Wet Vales ; Narrow swampy small depressions. Sandy soils.
Lw - Ludlow Wet Flats ; Flats with poor subsoil drainage in winter. Deep yellow brown siliceous sands over limestone (i.e. Spearwood Sands).
Lwg - Ludlow Wet Clayey Flats ; Poorly drained flats with heavy clayey (Cokelup) soils. Some areas saline in summer.
Lwr - Ludlow Wet Rocky Flats ; Flats with high winter watertables and shallow brown and yellow sands over limestone (i.e. Shallow Spearwood Sand). Limestone often present on surface.

Metricup Scarp Land System:
M - Metricup Slopes ; Moderate slopes (gradients mainly 10-15%) with gravelly duplex (Forest Grove) soils.
Mr - Metricup Rocky Slopes ; Moderate slopes (gradients mainly 10-15%) with shallow gravelly soils and occasional lateritic and granitic outcrop.
Mv - Metricup Valleys ; Valleys with moderately inclined sideslopes and valley floors with relatively steep gradients. Gravelly duplex (Forest Grove) soils.
Mvr - Metricup Rocky Valleys ; Deeply incised valleys with steep sideslopes and valley floors with relatively steep gradients. Shallow gravelly soils and occasional lateritic and granitic outcrop.

Nillup Plain Land System:
N - Nillup Flats ; Flats mainly with pale grey mottled (Mungite) soils.
Nd - Nillup Deep Sandy Flats ; Flats with deep bleached sands.
Ndw - Nillup Wet Deep Sandy Flats ; Poorly drained flats with deep organic stained sands.
Nf - Nillup Fertile Flats ; Well drained valley flats with deep (often reddish and brown loamy) alluvial soils.
Ni - Nillup Ironstone Rises ; Low rises with shallow gravelly sands over laterite.
Nv - Nillup Vales ; Small narrow V-shaped drainage depressions.
Nvw - Nilup Wet Vales ; Small broad U-shaped drainage depressions with swampy floors.
Nw - Nilup Wet Flats ; Poorly drained flats with mottled pale grey (Mungite) soils.

Quindalup Coast Land System
Q - Quindalup Flats ; Flats and low rises with deep pale calcareous sand. This unit also includes a narrow strip of; Qb - Quindalup Beach ;Beach and foredunes of calcareous sand, along the Geographe Bay coastline.
Q5 - Quindalup Dunes ; Steep dunes (with gradient mainly around 20%) of calcareous sands.
Qw - Quindalup Wet Flats ; Poorly drained flats around the edge of the Vasse Estuary. Dark calcareous sands and mixed estuarine deposits.
Qwy - Quindalup Very Wet Saline Flats ; Vasse, Wonnerup and Broadwater Estuaries. Low lying depressions which are often underwater in winter and saline in summer.

Scott River Plain Land System:
Sd - Scott Deep Sandy Flats ; Flats with high winter watertables and deep bleached siliceous sands.
Sd2 - Scott Deep Sandy Gentle Rises ; Low dunes and rises with deep bleached siliceous sands.
Si - Scott Ironstone Rises ; Low rises with shallow sands over laterite.
Swd - Scott Deep Sandy Wet Flats ; Poorly drained flats with deep organic stained siliceous sands.
Swi - Scott Wet Ironstone Flats ; Poorly drained flats with shallow sands over laterite (bog iron ore).

Treeton Hills Land System:
T - Treeton Slopes ; Slopes with gradients generally ranging from 2-15% and gravelly duplex (Forest Grove) and pale grey mottled (Mungite) soils. This unit can be sub divided into; T2 - Treeton Gentle Slopes ; Slopes 2-5%, T3 - Treeton Low Slopes ; Slopes 5-10%, T4 - Treeton Moderate Slopes ; Slopes 10-15%, and T5 - Treeton Steep Slopes ; Slopes >15%. In most cases T3 is the dominant unit present.
Td3 - Treeton Deep Sandy Slopes ; Slopes (with gradients generally 5-10% but ranging from 2-15%) with deep bleached sands.
Tf - Treeton Fertile Flats ; Well drained valley flats and floodplains with deep alluvial soils, often red brown loams (i.e. Marybrook soils).
Tfw - Treeton Wet Fertile Flats ; Poorly drained valley flats and floodplains with deep alluvial soils (usually Marybrook soils).
Ti3 - Treeton Ironstone Slopes ; Low slopes (gradients ranging from 2-10%) with shallow gravelly sands over laterite.
Tv - Treeton Valleys ; Narrow V-shaped drainage depressions.
Tvw - Treeton Wet Valleys ; Broad U-shaped drainage depressions with swampy floors.
Tw2 - Treeton Wet Slopes ; Gentle slopes (gradients 2-5%) with high winter water tables and pale grey mottled (Mungite) soils.

Wilyabrup Valleys Land System:
W - Wilyabrup Slopes ; Slopes with gradients generally 5-15%, but ranging from 2-30%, and gravelly soils (i.e. Forest Grove and Keenan Soils). This unit can be divided into; W3 - Wilyabrup Low Slopes ; Gradients 5-10% and W4 - Wilyabrup Steep Slopes ; Gradients 10-15%. In most cases W3 is the dominant unit present.
Wd3 - Wilyabrup Deep Sandy Slopes ; Low slopes (gradients generally 5-10%) with deep bleached sands.
We3 - Wilyabrup Exposed Slopes ; Low slopes (gradients generally 5-10%) exposed to strong winds off ocean.
WEw - Wilyabrup Exposed Swamps ; Swamp on granitic headland at Cape Leeuwin.
Wf - Wilyabrup Fertile Flats ; Well drained valley flats and floodplains with deep alluvial soils, often red brown loams (i.e. Marybrook soils).
Wfw - Wilyabrup Wet Fertile Flats ; Poorly drained valley flats and floodplains with deep alluvial soils.
Wi3 - Wilyabrup Ironstone Slopes ; Low slopes (gradients generally 5-10%) with shallow gravelly sands over laterite.
Wr3 - Wilyabrup Rocky Slopes ; Low slopes (gradients generally 5-10%) with shallow rocky soils and some granitic outcrop.
WR - Wilyabrup Rock Slopes ; Slopes dominated by granitic outcrop.
WrE3 - Wilyabrup Exposed Rocky Slopes ; Low slopes (gradients mainly 5-10%) with shallow rocky soils and some granitic outcrop, exposed to strong winds off the ocean.
WRE - Wilyabrup Granitic Headlands ; Areas on the west coast dominated by granitic outcrop.
Wv - Wilyabrup Valleys ; Narrow V-shaped drainage depressions.
Wvw - Wilyabrup Wet Valleys ; Broad U-shaped drainage depressions with swampy floors.
Ww3 - Wilyabrup Wet Slopes ; Low slopes (gradients 5-10%) with high winter water tables.

Yelverton Shelf Land System:
Y - Yelverton Flats and Slopes - Flats and low slopes with mottled pale grey gradational (Mungite) and gravelly duplex (Forest Grove) soils. This unit can be divided into; Y - Yelverton Flats ; Flats (gradients 0-2%) with gravelly duplex (Forest Grove), mottled pale grey (Mungite) and yellow sandy soils, and Y3 - Yelverton Low Slopes ; Low slopes (gradients 5-10%) with gravelly duplex (Forest Grove) and mottled pale grey (Mungite) soils. Y3 usually occurs along the northern margin of the land system.
Yd - Yelverton Deep Sandy Flats and Low Slopes ; Flats and low slopes with deep bleached sand. This unit can be divided into; Yd - Yelverton Deep Sandy Flats ; Gradients 0-2%, and Yd3 - Yelverton Deep Sandy Low Slopes ; gradients generally 5-10%. Yd3 usually occurs along the northern margin of the land system.
Yf - Yelverton Fertile Flats ; Valley flats and floodplains with deep alluvial soils, often red brown loams (i.e. Marybrook Soils)
Yi - Yelverton Ironstone Flats ; Flats with shallow gravelly sands over sheet laterite. Laterite outcrop sometimes present. This unit can be divided into; Yi - Yelverton Ironstone Flats ; Gradients 0-2%, and Yi3 - Yelverton Low Ironstone Slopes ; Gradients 5-10%. Yi3 usually occurs along the northern margin of the land system.
Yv - Yelverton Valleys ; Narrow V-shaped drainage depressions and small valleys.
Yvw - Yelverton Wet Valleys ; Broad U-shaped drainage depressions with swampy floors.
Yw - Yelverton Wet Flats ; Poorly drained flats with mottled pale grey (Mungite) soils.
Ywi - Yelverton Wet Ironstone Flats ; Winter wet flats with shallow red brown sandy and loamy soils over sheet laterite (bog iron ore).
XX - Disturbed Terrain ; Areas where the natural land surface has been greatly altered. i.e. areas of landfill, sand mining activity etc.